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a semiconductor active region disposed on the insulator layer, the active region including a source, a drain, and a body disposed therebetween, the source and body forming an abrupt or hyperabrupt source/body junction;

a gate disposed on the body such that the gate, source, drain and body are operatively arranged to form a transistor; and

an implanted region forming an interface between the body and the drain, the interface being a graded drain/body junction that is disposed at least partially under the gate.

Please add new claim 17 as follows:

A2

17. (New) The SOI device according to claim 1, wherein the graded drain/body junction is less abrupt than the source/body junction.

Remarks

The various parts of the Office Action are discussed below under similar headings. Claim 1 has been amended. Claim 17 has been added. Upon entry of the amendments, claims 1-17 are pending in the present application.

Claim Rejections - 35 USC 103

Claims 1-8 stand rejected under 35 USC 103(a) as being unpatentable over Kim (US 6,159,778) in view of Eimori (US 5,245,208). The rejection is improper for at least the following reasons.

Claim 1, as amended, recites an SOI device including a semiconductor active region and an implanted region. The active region includes a source, a drain, and a body. The source and body form an abrupt or hyperabrupt source/body junction. The implanted region forms an interface between the body and the drain, the interface being a graded drain/body junction.

Accordingly, the SOI device has an asymmetrical source/body junction and drain/body junction. As is stated in the specification, the source/body abrupt junction aids in reducing floating body effects by increasing junction leakage, while the

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drain/body junction aids in reducing parasitic junction capacitance (see specification at, for example, page 5, lines 3-6). The implanted region helps to introduce defects near the drain/body junction, making the junction leaky, which reduces floating body effects (see specification at, for example, page 5, lines 6-8).

Kim and Eimori, whether taken alone or in combination, do not teach or suggest an abrupt or hyperabrupt source/body junction in the source side of the device, and an implanted region with a graded drain/body junction in the drain side of the device. Kim discloses a source and drain, but is absent any teaching of an implanted region providing a graded drain/body junction. Eimori discloses symmetrical source and drain regions, as can be seen in the Figures of Eimori.

For at least the foregoing reasons, it is respectfully requested that the rejection of claim 1, and claims 2-8 depending therefrom, be withdrawn.

New Claim 17

New claim 17 provides that the graded drain/body junction is less abrupt than the source/body junction.

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Conclusion

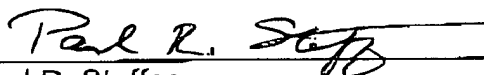
Allowance of the application is respectfully requested.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should any fees be due as a result of the filing of this response, the Commissioner is hereby authorized to charge the Deposit Account No. 18-0988, under the above Case number.

Respectfully submitted,

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Version with markings to show changes made*Please amend claim 1 as follows:*

1. (Amended) A semiconductor-on-insulator (SOI) device comprising:
 - a semiconductor substrate layer;
 - an insulator layer disposed on the substrate layer;
 - a semiconductor active region disposed on the insulator layer, the active region including a source, a drain, and a body disposed therebetween, the source and body forming an abrupt or hyperabrupt source/body junction;
 - a gate disposed on the body such that the gate, source, drain and body are operatively arranged to form a transistor; and
 - an implanted region forming an interface between the body and the drain, the interface being a graded drain/body junction [the implanted region formed by tilted atom implantation in a direction towards the active region and] that is disposed at least partially under the gate [from an angle tilted towards the drain with respect to vertical, the implanted region resulting in the formation of a graded drain/body junction].

Please add new claim 17 as follows:

17. (New) The SOI device according to claim 1, wherein the graded drain/body junction is less abrupt than the source/body junction.

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